



STIC Search Report

EIC 1700

STIC Database Tracking Number: 96510

TO: Camie Thompson

Location:

Art Unit: 1774

June 17, 2003

Case Serial Number: 10074018

From: John Calve

Location: EIC 1700

CP3/4-3D62

Phone: 703-308-4139

John.calve@uspto.gov

Search Notes

Search Results

Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the EIC searcher* who conducted the search *or contact*:

Kathleen Fuller, Team Leader, 308-4290, CP3/4 3D62

Voluntary Results Feedback Form

➤ *I am an examiner in Workgroup:* *Example:*

➤ *Relevant prior art found, search results used as follows:*

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Search results were not useful in determining patentability or understanding the invention.

Other Comments:

=> d his

FILE 'REGISTRY' ENTERED AT 13:58:00 ON 17 JUN 2003

L1 60663 S 0-3/LA
L2 8781 S 0-3/LU
L3 53726 S 0-3/Y
L4 11387 S 0-3/SC
L5 29059 S 0-3/GD
L6 37813 S 0-3/CE
L7 297846 S 0-5/AL
L8 44719 S 0-5/GA
L9 182435 S 12/O
L10 7086 S L9 AND (L1 OR L2 OR L3 OR L4)
L11 2296 S L10 AND L7
L12 1409 S L10 AND L8
L13 3348 S L10 AND (L7 OR L8)
L14 693139 S 0-12/FE
L15 1634 S L13 NOT L14
L16 1448333 S 3-6/NC
L17 1465 S L15 AND L16
L18 9491 S L9 AND (L1 OR L2 OR L3 OR L4 OR L5 OR L6)
L19 4240 S L18 AND (L7 OR L8)
L20 1976 S L19 NOT L14
L21 1783 S L20 AND L16

FILE 'HCA' ENTERED AT 14:48:08 ON 17 JUN 2003

L22 2675 S L17
L23 4497 S L21

FILE 'REGISTRY' ENTERED AT 14:53:23 ON 17 JUN 2003

L24 1 S LITHIUM/CN
L25 1 S SODIUM/CN
L26 1 S POTASSIUM/CN
L27 1 S COPPER/CN
L28 1 S SILVER/CN
L29 1 S GOLD/CN
L30 6 S L24 OR L25 OR L26 OR L27 OR L28 OR L29

FILE 'HCA' ENTERED AT 14:54:57 ON 17 JUN 2003

L31 882511 S L30
L32 64 S L22 AND L31
L33 109 S L23 AND L30
L34 285616 S DOPE? OR DOPANT? OR DOPING?
L35 27 S L32 AND L34
L36 27 S L33 AND L35
L37 17 S 1950-2000/PY AND L36
L38 10 S L36 NOT L37
L39 117271 S (LIQUID? OR LIQ#) (2N)CRYSTAL?
L40 213215 S DISPLAY?
L41 31769 S L39(2N)L40
L42 0 S L37 AND L39
L43 4 S L37 AND L40
L44 560603 S EL OR E(W)L OR ELECTROLUM!N? OR ORGANOLUM!N? OR (ELECTRO OR O
L45 735989 S PHOSPHOR? OR FLOURES? OR LUMINES?
L46 12 S L37 AND L45
L47 12 S L37 AND L44

L48 26965 S LIGHT?(2N)SOURC?
L49 1 S L37 AND L48
L50 3818369 S NA OR SODIUM# OR LI OR LITHIUM# OR K OR POTASSIUM# OR CU OR C
L51 571 S L22 AND (L31 OR L50)
L52 245 S L51 AND L34
L53 2 S L52 AND L39
L54 8 S L52 AND L40
L55 85 S L52 AND L45
L56 4 S L52 AND L48
L57 310262 S (L31 OR L50) (3N)USES
L58 191783 S L31(2N)USE?
L59 52 S L22 AND L58
L60 64 S L22 AND L57
L61 21 S L59 AND L34
L62 16 S L61 AND L44
L63 18 S L61 AND L45
L64 26965 S LIGHT?(2N)SOURCE?
L65 2 S L61 AND L64
L66 21 S L61 OR L62 OR L63 OR L65
L67 26 S L66 OR L53 OR L54 OR L56
L68 15 S L67 AND 1950-2000/PY
L69 13 S L67 AND 2001-2003/PY
L70 17 S L37 OR L43 OR L46 OR L47 OR L49
L71 2 S L68 NOT L70
L72 19 S L68 OR L70 OR L71

FILE 'REGISTRY' ENTERED AT 15:26:53 ON 17 JUN 2003

L76 30903 S ((LA OR LU OR Y OR SC OR GD OR CE) (L) (GD OR CE) (L)O)/ELS(L)3-
L77 17283 S L76 AND TIS/CI
L78 2798 S L77 AND L9
L79 1144 S L78 NOT L14
L80 387 S L79 NOT (L15 OR L21)
L81 9491 S L9 AND (L1 OR L2 OR L3 OR L4 OR L5 OR L6)
L82 0 S L9 AND (L1 AND L2 AND L3 AND L4 AND L5 AND L6)

FILE 'HCA' ENTERED AT 15:34:34 ON 17 JUN 2003

83 951 S L80
L84 902 S L83 AND 1907-2000/PY
L85 7 S L84 AND L31
L86 7 S L85 NOT L72

=> d L72 1-19 cbib abs hitind hitstr

L72 ANSWER 1 OF 19 HCA COPYRIGHT 2003 ACS
138:80440 **Light emitting** device.. Shimizu, Yoshinori;
Sakano, Kensho; Noguchi, Yasunobu; Moriguchi, Toshio (Nichia Chemical
Industries, Ltd., Japan). Eur. Pat. Appl. EP 1271664 A2 20030102, 40 pp.
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL,
SE, MC, PT, IE, FI. (English). CODEN: EPXXDW. APPLICATION: EP
2002-17698 19970729. PRIORITY: JP 1996-198585 19960729; JP 1996-244339
19960917; JP 1996-245381 19960918; JP 1996-359004 19961227; JP 1997-81070
19970331; EP 1997-102678 19970729.

AB A **light emitting** device is described comprising a
light emitting component (e.g., blue LED) and a
phosphor capable of absorbing a part of the **light**
emitted by the **light emitting** component and
emitting light of a wavelength different from that of
the absorbed light, wherein the color of a white light obtained by mixing
the **light emitted** by the **light**

emitting component and the light generated by the **phosphor** is substantially along the black body radiation locus in the chromaticity diagram, wherein a point of chromaticity of the light generated by the **light emitting** component, and by the **phosphor** and an amt. of the **phosphor** are adjusted so that the color of the white light is substantially along the black body radiation locus such that the color of the white light has a color temp. of 8080.degree.K or 4400.degree.K.

IC ICM H01L033-00
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 76
 ST white **light emitting** device
 IT **Electroluminescent** devices
 Quantum well devices
 (white **light emitting** device)
 IT **Phosphors**
 (white **light emitting** device using **phosphors**)
 IT Light
 (white; white **light emitting** device)
 IT 155108-14-8, Gallium indium nitride (Ga_{0.6}In_{0.4}N)
 RL: DEV (Device component use); USES (Uses)
 (LED **light emitter**; white **light emitting** device using **phosphors**)
 IT 153281-80-2, Gallium indium nitride (Ga_{0.95}In_{0.05}N)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (LED **light emitting** layer; white **light emitting** device using **phosphors**)
 IT 7440-66-6, Zinc, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (activation layer; white **light emitting** device using **phosphors**)
 IT 106097-44-3, Aluminum gallium nitride (AlGa_N)
 RL: DEV (Device component use); USES (Uses)
 (clad layer of LED; white **light emitting** device using **phosphors**)
 IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant on cadmium zinc sulfide; white **light emitting** device using **phosphors**)
 IT 55763-23-0, Aluminum gallium yttrium oxide (Al₃Ga₂Y₃O₁₂)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (green **phosphor**; white **light emitting** device using **phosphors**)
 IT 120994-23-2, Gallium indium nitride (GaInN)
 RL: DEV (Device component use); USES (Uses)
 (**light emitter**, activation layer; white **light emitting** device using **phosphors**)
 IT 12005-21-9, Aluminum yttrium oxide (Al₅Y₃O₁₂) 12030-36-3, Indium yttrium oxide (In₅Y₃O₁₂) 12442-27-2, Cadmium zinc sulfide (Cd₀-1Zn₀-1S)
 119854-92-1, Aluminum gadolinium gallium oxide (Al_{2.5}Gd₃Ga_{2.5}O₁₂)
 175360-92-6, Aluminum gallium yttrium oxide (Al_{2.5}Ga_{2.5}Y₃O₁₂)
 202586-74-1, Aluminum gadolinium yttrium oxide (Al₅Gd_{1.2}Y_{1.8}O₁₂)
 202586-75-2, Aluminum cerium gadolinium samarium yttrium oxide (Al₅Ce_{0.09}Gd_{1.71}Sm_{0.03}Y_{1.17}O₁₂) 480391-91-1, Aluminum gadolinium yttrium oxide (Al_{2.5}Gd_{2.5}Y₃O₁₂)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)

(phosphor; white light emitting device using phosphors)

IT 202586-76-3, Aluminum gadolinium yttrium oxide (Al5Gd2.4Y0.6O12)
 202586-77-4, Aluminum gadolinium yttrium oxide (Al5Gd1.8Y1.2O12)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (red phosphor; white light emitting device using phosphors)

IT 25617-97-4, Gallium nitride (GaN)
 RL: DEV (Device component use); USES (Uses)
 (semiconductor; white light emitting device using phosphors)

IT 1344-28-1, Alumina, uses
 RL: DEV (Device component use); USES (Uses)
 (substrate; white light emitting device using phosphors)

IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (white light emitting device using phosphors)

IT 7440-45-1, Cerium, properties
 RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (white light emitting device using phosphors)

IT 202586-73-0, Aluminum gadolinium yttrium oxide (Al5Gd0.6Y2.4O12)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (yellow light emitting phosphor; white light emitting device using phosphors)

IT 7440-50-8, Copper, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant on cadmium zinc sulfide; white light emitting device using phosphors)

RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 55763-23-0, Aluminum gallium yttrium oxide (Al3Ga2Y3O12)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (green phosphor; white light emitting device using phosphors)

RN 55763-23-0 HCA
 CN Aluminum gallium yttrium oxide (Al3Ga2Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	2	7440-55-3
Al	3	7429-90-5

112.-
 ← good record.
 Al3. Ga2. Y3. O12
 +
 = 5

IT 119854-92-1, Aluminum gadolinium gallium oxide (Al2.5Gd3Ga2.5O12)
 175360-92-6, Aluminum gallium yttrium oxide (Al2.5Ga2.5Y3O12)
 202586-74-1, Aluminum gadolinium yttrium oxide (Al5Gd1.2Y1.8O12)
 202586-75-2, Aluminum cerium gadolinium samarium yttrium oxide (Al5Ce0.09Gd1.71Sm0.03Y1.17O12) 480391-91-1, Aluminum gadolinium

yttrium oxide (Al_{2.5}Gd_{2.5}Y₃O₁₂)

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(phosphor; white light emitting device

using phosphors)

RN 119854-92-1 HCA

CN Aluminum gadolinium gallium oxide (Al_{2.5}Gd₃Ga_{2.5}O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Ga	2.5	7440-55-3
Gd	3	7440-54-2
Al	2.5	7429-90-5

RN 175360-92-6 HCA

CN Aluminum gallium yttrium oxide (Al_{2.5}Ga_{2.5}Y₃O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	2.5	7440-55-3
Al	2.5	7429-90-5

RN 202586-74-1 HCA

CN Aluminum gadolinium yttrium oxide (Al₅Gd_{1.2}Y_{1.8}O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	1.8	7440-65-5
Gd	1.2	7440-54-2
Al	5	7429-90-5

RN 202586-75-2 HCA

CN Aluminum cerium gadolinium samarium yttrium oxide
(Al₅Ce_{0.09}Gd_{1.71}Sm_{0.03}Y_{1.17}O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	1.17	7440-65-5
Gd	1.71	7440-54-2
Ce	0.09	7440-45-1
Sm	0.03	7440-19-9
Al	5	7429-90-5

RN 480391-91-1 HCA

CN Aluminum gadolinium yttrium oxide (Al_{2.5}Gd_{2.5}Y₃O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5

Gd		2.5		7440-54-2
Al		2.5		7429-90-5

IT 202586-76-3, Aluminum gadolinium yttrium oxide (Al5Gd2.4Y0.6O12)
202586-77-4, Aluminum gadolinium yttrium oxide (Al5Gd1.8Y1.2O12)

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(red **phosphor**; white **light emitting**
device using **phosphors**)

RN 202586-76-3 HCA

CN Aluminum gadolinium yttrium oxide (Al5Gd2.4Y0.6O12) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		0.6		7440-65-5
Gd		2.4		7440-54-2
Al		5		7429-90-5

RN 202586-77-4 HCA

CN Aluminum gadolinium yttrium oxide (Al5Gd1.8Y1.2O12) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		1.2		7440-65-5
Gd		1.8		7440-54-2
Al		5		7429-90-5

IT 202586-73-0, Aluminum gadolinium yttrium oxide (Al5Gd0.6Y2.4O12)

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(yellow **light emitting phosphor**; white
light emitting device using **phosphors**)

RN 202586-73-0 HCA

CN Aluminum gadolinium yttrium oxide (Al5Gd0.6Y2.4O12) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		2.4		7440-65-5
Gd		0.6		7440-54-2
Al		5		7429-90-5

L72 ANSWER 2 OF 19 HCA COPYRIGHT 2003 ACS

133:96587 Light emitting device and **display**. Shimizu, Yoshinori;
Sakano, Kensho; Noguchi, Yasunobu; Moriguchi, Toshio (Nichia Chemical
Industries, Ltd., Japan). Eur. Pat. Appl. EP 1017112 A2 20000705
, 42 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT,
LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN:
EPXXDW. APPLICATION: EP 2000-102678 19970729. PRIORITY: JP 1996-198585
19960729; JP 1996-244339 19960917; JP 1996-245381 19960918; JP 1996-359004
19961227; JP 1997-81070 19970331; EP 1997-933047 19970729.

AB Light-emitting devices comprising a light-emitting component and a
phosphor capable converting the light emitted by the light-emitting
component to light of wavelength different from that of the absorbed light
are described in which the light-emitting component is a blue-emitting
diode with a main emission peak in the 400-530 nm region and comprises

IniGajAlkN (0 .ltoreq. i; 0 .ltoreq. j; 0 .ltoreq. k; and i+j+k=1) **doped** with various impurities and the phosphor contains .gtoreq.1e garnet fluorescent materials described by the general formula $(\text{Re}1-\text{rSmr})3(\text{Al}1-\text{sGas})5\text{O}12:\text{Ce}$ (0 .ltoreq. r < 1; and 0 .ltoreq. s < 1; Re = Y and/or Gd; and .gtoreq.1 material contained in the phosphor has r .noteq. 0) and a main emission wavelength of the phosphor is set to be longer than the main emission peak of the light-emitting component. When the phosphor is $\text{Y}3(\text{Al}1-\text{sGas})5\text{O}12:\text{Ce}$, a second fluorescent material represented by the general formula $\text{Re}3\text{Al}5\text{O}12:\text{Ce}$ is preferably included.

IC ICM H01L033-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

IT Electroluminescent devices

Electroluminescent devices
(light-emitting devices with phosphor-contg. emission conversion layers and **displays** using them)

IT 12005-21-9, Yttrium aluminum oxide ($\text{Y}3\text{Al}5\text{O}12$) 12030-36-3, Yttrium indium oxide ($\text{Y}3\text{In}5\text{O}12$) **55763-23-0**, Aluminum gallium yttrium oxide ($\text{Al}3\text{Ga}2\text{Y}3\text{O}12$) 119854-92-1, Gadolinium aluminum gallium oxide ($\text{Gd}3(\text{Al}0.5\text{Ga}0.5)5\text{O}12$) **175360-92-6**, Yttrium aluminum gallium oxide ($\text{Y}3(\text{Al}0.5\text{Ga}0.5)5\text{O}12$) **202586-73-0**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.2\text{Y}0.8)3\text{Al}5\text{O}12$) **202586-74-1**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.4\text{Y}0.6)3\text{Al}5\text{O}12$) **202586-75-2**, Cerium gadolinium samarium yttrium aluminum oxide ($(\text{Ce}0.03\text{Gd}0.57\text{Sm}0.01\text{Y}0.39)3\text{Al}5\text{O}12$) **202586-76-3**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.8\text{Y}0.2)3\text{Al}5\text{O}12$) **202586-77-4**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.6\text{Y}0.4)3\text{Al}5\text{O}12$)

RL: DEV (Device component use); USES (Uses)
(cerium-activated; light-emitting devices with phosphor-contg. emission conversion layers and **displays** using them)

IT 25617-97-4, Gallium nitride 153281-80-2, Indium gallium nitride ($\text{In}0.05\text{Ga}0.95\text{N}$) 155108-14-8, Indium gallium nitride ($\text{In}0.4\text{Ga}0.6\text{N}$)

RL: DEV (Device component use); USES (Uses)
(light-emitting devices with phosphor-contg. emission conversion layers and **displays** using them)

IT 7440-45-1, Cerium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(light-emitting devices with phosphor-contg. emission conversion layers and **displays** using them)

IT **55763-23-0**, Aluminum gallium yttrium oxide ($\text{Al}3\text{Ga}2\text{Y}3\text{O}12$) **175360-92-6**, Yttrium aluminum gallium oxide ($\text{Y}3(\text{Al}0.5\text{Ga}0.5)5\text{O}12$) **202586-73-0**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.2\text{Y}0.8)3\text{Al}5\text{O}12$) **202586-74-1**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.4\text{Y}0.6)3\text{Al}5\text{O}12$) **202586-75-2**, Cerium gadolinium samarium yttrium aluminum oxide ($(\text{Ce}0.03\text{Gd}0.57\text{Sm}0.01\text{Y}0.39)3\text{Al}5\text{O}12$) **202586-76-3**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.8\text{Y}0.2)3\text{Al}5\text{O}12$) **202586-77-4**, Gadolinium yttrium aluminum oxide ($(\text{Gd}0.6\text{Y}0.4)3\text{Al}5\text{O}12$)

RL: DEV (Device component use); USES (Uses)
(cerium-activated; light-emitting devices with phosphor-contg. emission conversion layers and **displays** using them)

RN 55763-23-0 HCA

CN Aluminum gallium yttrium oxide ($\text{Al}3\text{Ga}2\text{Y}3\text{O}12$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2

Y		3		7440-65-5
Ga		2		7440-55-3
Al		3		7429-90-5

RN 175360-92-6 HCA

CN Aluminum gallium yttrium oxide (Al_{2.5}Ga_{2.5}Y₃O₁₂) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		3		7440-65-5
Ga		2.5		7440-55-3
Al		2.5		7429-90-5

RN 202586-73-0 HCA

CN Aluminum gadolinium yttrium oxide (Al₅Gd_{0.6}Y_{2.4}O₁₂) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		2.4		7440-65-5
Gd		0.6		7440-54-2
Al		5		7429-90-5

RN 202586-74-1 HCA

CN Aluminum gadolinium yttrium oxide (Al₅Gd_{1.2}Y_{1.8}O₁₂) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		1.8		7440-65-5
Gd		1.2		7440-54-2
Al		5		7429-90-5

RN 202586-75-2 HCA

CN Aluminum cerium gadolinium samarium yttrium oxide
(Al₅Ce_{0.09}Gd_{1.71}Sm_{0.03}Y_{1.17}O₁₂) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		1.17		7440-65-5
Gd		1.71		7440-54-2
Ce		0.09		7440-45-1
Sm		0.03		7440-19-9
Al		5		7429-90-5

RN 202586-76-3 HCA

CN Aluminum gadolinium yttrium oxide (Al₅Gd_{2.4}Y_{0.6}O₁₂) (9CI) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O		12		17778-80-2
Y		0.6		7440-65-5
Gd		2.4		7440-54-2

Al | 5 | 7429-90-5

RN 202586-77-4 HCA

CN Aluminum gadolinium yttrium oxide (Al5Gd1.8Y1.2O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Y	1.2	7440-65-5
Gd	1.8	7440-54-2
Al	5	7429-90-5

L72 ANSWER 3 OF 19 HCA COPYRIGHT 2003 ACS

131:344029 **Phosphors** having a semiconductor host surrounded by a shell. Gray, Henry F.; Yang, Jianping; Hsu, David S. Y.; Ratna, Banhalli R. (USA). U.S. US 5985173 A 19991116, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1997-972401 19971118.

AB Nanocryst. **phosphors** with cores with diams. of 1-30 nm comprising a **doped** semiconductor host material surrounded by an inorg. shell material are described in which the **doped** semiconductor host material has a first bandgap defining band edges, the shell material has a thickness of less than one-half the diam. of the core and a second bandgap either larger than the first bandgap or having no states within 20-200 meV of the band edges, or offset from the first bandgap so that an electron or hole from the **doped** host material is reflected back into the **doped** semiconductor host material. The bicontinuous cubic phase may be formed by mixing a surfactant with a liq. hydrophilic phase in a ratio effective to form the bicontinuous cubic phase, and wherein .gtoreq.1 of the surfactant and the liq. hydrophilic phase includes, before mixing, .gtoreq.1 of the reactants. The host material may a Group II chalcogenide or other compd. selected from ZnS, ZnO, CaS, SrS, ZnxCd1-xS, Y2O3, Y2O2S, Zn2SiO4, Y3Al5O12, Y3(Al,Ga)5O12, Y2SiO5, LaOCl, InBO3, Gd2O2S, ZnGa2O4, and yttrium niobate; the **dopant** may comprise Mn; Cu; Ag; Eu; Cu,Cl; Cu,Tb; Tb; Ag,Cl; Cl; Cu,Al; Ce; Er; Er,Cl; or Zn, and the shell may be ZnO or ZnOH. The shell prevents or significantly reduces nonradiative recombination at the surface of the original **phosphor**.

IC ICM C09K011-00

NCL 252301400R

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST semiconductor **phosphor** nonradiative recombination preventing shell

IT Coating process

Phosphors

(**phosphors** based on semiconductor hosts surrounded by shells for nonradiative recombination redn.)

IT 7439-96-5, Manganese, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses 7440-53-1, Europium, uses 7440-66-6, Zinc, uses 7782-50-5, Chlorine, uses RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**phosphors** based on semiconductor hosts surrounded by shells for nonradiative recombination redn.)

IT 1314-13-2, Zinc oxide (ZnO), uses 1314-36-9, Yttrium oxide (Y2O3), uses 1314-96-1, Strontium sulfide 1314-98-3, Zinc sulfide, uses 12005-21-9,

Yttrium aluminum oxide (Y3Al5O12) 12027-88-2, Yttrium silicate (Y2SiO5) 12064-18-5, Zinc gallate (ZnGa2O4) 12339-07-0, Gadolinium oxide sulfide (Gd2O2S) 12340-04-4, Yttrium oxide sulfide (Y2O2S) 12442-27-2, Cadmium zinc sulfide 13597-65-4, Zinc silicate (Zn2SiO4) 13709-93-8, Indium borate (InBO3) 13759-25-6, Lanthanum oxychloride (LaOCl) 20548-54-3, Calcium sulfide 36011-55-9, Zinc hydroxide (ZnOH) 60098-66-0, Niobium yttrium oxide **110621-14-2**, Yttrium aluminum gallium oxide (Y3(Al,Ga)5O12)

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**phosphors** based on semiconductor hosts surrounded by shells for nonradiative recombination redn.)

IT **7440-22-4**, Silver, **uses 7440-50-8**, Copper, **uses**

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**phosphors** based on semiconductor hosts surrounded by shells for nonradiative recombination redn.)

RN 7440-22-4 HCA

CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **110621-14-2**, Yttrium aluminum gallium oxide (Y3(Al,Ga)5O12)

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**phosphors** based on semiconductor hosts surrounded by shells for nonradiative recombination redn.)

RN 110621-14-2 HCA

CN Aluminum gallium yttrium oxide ((Al,Ga)5Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	0 - 5	7440-55-3
Al	0 - 5	7429-90-5

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131:278811 Temperature dependence and optimization of 970-nm diode-pumped Yb:YAG and Yb:LuAG lasers. Kasamatsu, Tadashi; Sekita, Hitoshi; Kuwano, Yasuhiko (NEC Corporation, Kanagawa, 216, Japan). Applied Optics, 38(24), 5149-5153 (English) 1999. CODEN: APOPAI. ISSN: 0003-6935. Publisher: Optical Society of America.

AB We have studied the temp. dependence of output performances for 970-nm diode-pumped Yb:YAG (Yb3+:Y3Al5O12) and Yb:LuAG (Yb3+:Lu3Al5O12) lasers over the wide temp. range from 80 to 310 K. Temp.-optimized operation was exptl. demonstrated at .apprx.160 K and was theor. confirmed by taking into account the absorption spectra change of Yb crystals at low temps. Cooling the crystal to <160 K caused a narrowing of the absorption

bandwidth and decreased output power and efficiency.

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST ytterbium **doped** laser temp optimization

IT IR absorption
IR spectra
(near-IR; temp.-optimized diode-pumped ytterbium-**doped** YAG and LuAG lasers)

IT Optical pumping
Solid state lasers
Thermo-optical effect
(temp.-optimized diode-pumped ytterbium-**doped** YAG and LuAG lasers)

IT 7440-64-4, Ytterbium, uses 18923-27-8, Ytterbium(3+), uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**dopant**; temp.-optimized operation of diode-pumped YAG and LuAG lasers)

IT **7440-50-8, Copper, uses**
RL: NUU (Other use, unclassified); USES (Uses)
(heat-sink; output power of ytterbium-**doped** YAG and LuAG lasers vs. heat-sink temp., controlled using liq. nitrogen)

IT 12005-21-9, Aluminum yttrium oxide (Al₅Y₃O₁₂) **12253-68-8**, Aluminum lutetium oxide (Al₅Lu₃O₁₂)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(temp.-optimized operation of diode pumped ytterbium-**doped** lasers)

IT **7440-50-8, Copper, uses**
RL: NUU (Other use, unclassified); USES (Uses)
(heat-sink; output power of ytterbium-**doped** YAG and LuAG lasers vs. heat-sink temp., controlled using liq. nitrogen)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT **12253-68-8**, Aluminum lutetium oxide (Al₅Lu₃O₁₂)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(temp.-optimized operation of diode pumped ytterbium-**doped** lasers)

RN 12253-68-8 HCA

CN Aluminum lutetium oxide (Al₅Lu₃O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Lu	3	7439-94-3
Al	5	7429-90-5

L72 ANSWER 5 OF 19 HCA COPYRIGHT 2003 ACS

131:191694 Source reagents for MOCVD formation of non-linear optically active metal borate films and optically active metal borate films formed therefrom. Baum, Thomas H.; Stauff, Gregory; Studebaker, Daniel B.; Vaartstra, Brian A. (Advanced Technology Materials, Inc., USA). U.S. US 5948322 A **19990907**, 13 pp. (English). CODEN: USXXAM.
APPLICATION: US 1997-838587 19970410.

AB Metalorg. CVD precursor compns. useful for MOCVD formation of nonlinear

optically active metal borate thin films are described which comprise an organometallic source reagent for a metal reactively forming a nonlinear optically active metal borate, and an organoborate compd. are described by the general formula $B(OR)_3$ (R = independently selected H, alkyl, aryl, alkaryl, arylalkyl, alkenyl, fluoroalkyl, fluoroaryl, fluoroaralkyl, fluoroalkaryl, trialkylsilyl, and C5-8 carbocyclic groups) as the borate source reagent. The compns. may be employed for forming a nonlinear optically active metal borate thin film on a substrate, via depositing by CVD on the substrate a metal from the organometallic source reagent and a borate from the organoborate compd., to react the metal with the borate and yield the nonlinear optically active metal borate on the substrate. Nonlinear optically active devices, such as data storage devices, laser printers, **display** panels, and communications devices, can be fabricated using the compn. and method of the invention.

IC ICM G02F001-35
ICS G02B005-20
NCL 252584000
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
IT 7439-92-1P, Lead, uses
RL: DEV (Device component use); IMF (Industrial manufacture); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(barium borate **doped** with; source reagents for metalorg. CVD formation of nonlinear optically active metal borate films)
IT **109165-91-5P**, Aluminum neodymium yttrium borate ($Al_3(Nd,Y)(BO_3)_4$)
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(lead barium borate source reagents for metalorg. CVD formation of nonlinear optically active metal borate films)
IT 12007-41-9P, **Lithium** borate (LiB_3O_5) 12712-38-8P, **Potassium** borate 13701-59-2P, Barium borate (BaB_2O_4) 161726-68-7P, Boron cesium **lithium** oxide (B_6CsLiO_{10}) 164111-55-1P, Barium lead borate ($(Ba,Pb)(BO_2)_2$)
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(source reagents for metalorg. CVD formation of nonlinear optically active metal borate films)
IT **109165-91-5P**, Aluminum neodymium yttrium borate ($Al_3(Nd,Y)(BO_3)_4$)
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(lead barium borate source reagents for metalorg. CVD formation of nonlinear optically active metal borate films)
RN 109165-91-5 HCA
CN Aluminum neodymium yttrium borate ($Al_3(Nd,Y)(BO_3)_4$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
BO3	4	14213-97-9
Y	0 - 1	7440-65-5
Nd	0 - 1	7440-00-8
Al	3	7429-90-5

- 131:150906 Development of standards for characterization of cathodoluminescence efficiency. Shea, Lauren E.; Walko, Robert J. (Sandia National Labs., Albuquerque, NM, USA). Proceedings of SPIE-The International Society for Optical Engineering, 3636(Flat Panel Display Technology and Display Metrology), 105-115 (English) 1999. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.
- AB Cathodoluminescence (CL) characterization in a demountable vacuum chamber is an important benchmarking tool for flat-panel **display phosphors** and screens. The proper way to perform these measurement is to minimize the effects of secondary electrons, excite the **phosphor**/screen with a uniform beam profile, and maintain a clean vacuum environment. CL measurements are important for preliminary evaluation and life-testing of **phosphor** powders and screens prior to incorporation into the FPD. A survey of many CL characterization systems currently in use revealed the myriad of spectroradiometers, colorimeters, electron guns, vacuum pumps, mass spectrometers, etc. That introduce many avenues for error that are often difficult to isolate. A preliminary round-robin expt. was coordinated by Sandia and involved five other research groups. The purpose of this expt. was to obtain an indication of equipment capabilities and instrument variations, as well as reliability and consistency of results. Each group was asked to measure the luminance and chromaticity coordinates of a Y2Al2Ga3O12:Tb pellet and calc. the luminous efficiency. Pellets were chosen to reduce errors assocd. with processing and handling of powders or screens. Some of the data reported in this expt. were in good agreement, while others differed significantly. Detg. sources of error in CL measurements is an ongoing effort. By performing this expt., the authors were able to identify some of the causes of error and develop a characterization protocol for **display phosphors**.
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
- ST std cathodoluminescence efficiency zinc sulfide **dopant**; garnet rare earth **doped luminescence** cathodo
- IT **Phosphors**
(cathodoluminescent; development of stds. for characterization of cathodoluminescence efficiency)
- IT Cathodoluminescence
Luminescent screens
Phosphors
Standards, physical
(development of stds. for characterization of cathodoluminescence efficiency)
- IT 7429-90-5, Aluminum, properties **7440-22-4, Silver**, properties 7440-27-9, Terbium, properties 7440-53-1, Europium, properties 14701-21-4, **Silver**(1+), properties 15065-79-9, Europium(1+), properties 22537-15-1, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(development of stds. for characterization of cathodoluminescence efficiency)
- IT 1314-36-9, Yttrium sesquioxide, properties 1314-98-3, Zinc sulfide, properties **12321-92-5**, Aluminum gallium yttrium oxide (Al2Ga3Y3O12)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(development of stds. for characterization of cathodoluminescence efficiency)
- IT **7440-22-4, Silver**, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(development of stds. for characterization of cathodoluminescence efficiency)
 RN 7440-22-4 HCA
 CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

IT 12321-92-5, Aluminum gallium yttrium oxide (Al₂Ga₃Y₃O₁₂)
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (development of stds. for characterization of cathodoluminescence efficiency)
 RN 12321-92-5 HCA
 CN Aluminum gallium yttrium oxide (Al₂Ga₃Y₃O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	3	7440-55-3
Al	2	7429-90-5

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129:208716 Prospects for dense, infrared emitting scintillators. Moses, W. W.; Weber, M. J.; Derenzo, S. E.; Perry, D.; Berdahl, P.; Boatner, L. A. (Lawrence Berkeley National Laboratory, University of California, Berkeley, CA, 94720, USA). IEEE Transactions on Nuclear Science, 45(3, Pt. 1), 462-466 (English) 1998. CODEN: IETNAE. ISSN: 0018-9499. Publisher: Institute of Electrical and Electronics Engineers.

AB The authors present results from an ongoing search for inorg. scintillators for x- and gamma- ray detection. The authors measure the scintillation properties (luminous efficiency, decay time, and emission wavelength) of powd. samples excited by brief x-ray pulses. To find scintillators that are compatible with Si photodetectors, the authors have tested over 1,100 samples using a photomultiplier tube with a GaAs:Cs photocathode, which is sensitive to 200-950 nm emissions. Optical filters are used to block emissions that are observable with bialkali PMTs. Several lanthanide and transition metal ions, mol. complexes, and II-VI compds. are known to have strong emissions at wavelengths >500 nm. Several compds. exhibit emission intensities comparable to com.

phosphors in the 600-900 nm range, including Eu and Sm **doped** LuPO₄, ScPO₄, and YPO₄. Significant emissions are also obsd. from Tb, Dy, Er, Pr, and Tm **doped** phosphates, as well as several intrinsic compds., notably Hg₂Cl₂. Scintillation characteristics of promising compds. (in powd. or small crystal form) are presented.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 71

IT 1306-23-6, Cadmium sulfide, properties 1308-96-9, Europia 1314-13-2, Zinc oxide, properties 1314-23-4, Zirconia, properties 1314-98-3, Zinc sulfide, properties 1344-28-1, Alumina, properties 5263-02-5, Zinc carbonate hydroxide (Zn₅(CO₃)₂(OH)₆) 7429-90-5, Aluminum, properties 7429-91-6, Dysprosium, properties 7439-89-6, Iron, properties 7440-00-8, Neodymium, properties 7440-02-0, Nickel, properties 7440-10-0, Praseodymium, properties 7440-19-9, Samarium, properties 7440-22-4, Silver, properties 7440-27-9, Terbium, properties 7440-30-4, Thulium, properties 7440-39-3, Barium, properties

7440-45-1, Cerium, properties 7440-52-0, Erbium, properties 7440-53-1, Europium, properties 7440-54-2, Gadolinium, properties 7440-60-0, Holmium, properties 7440-62-2, Vanadium, properties 7440-64-4, Ytterbium, properties 7789-17-5, Cesium iodide 7789-82-4, Calcium molybdenum oxide camoo4 7790-44-5, Antimony triiodide 7790-79-6, Cadmium difluoride 10026-08-1, Thorium tetrachloride 10031-62-6, Tin sulfate 10042-88-3, Terbium trichloride 10476-86-5, Strontium diiodide 12060-59-2, Strontium titanate 12183-49-2, Gadolinium tantalum oxide gdtao4 12209-21-1, Lutetium tantalum oxide lutao4 12233-56-6, Bismuth germanium oxide bi4ge3ol2 12253-26-8, Aluminum bismuth oxide al4bi2o9 12253-68-8, Aluminum lutetium oxide al5lu3ol2 13463-67-7, Titania, properties 13708-63-9, Terbium trifluoride 13709-38-1, Lanthanum trifluoride 13765-25-8, Europium trifluoride 13765-26-9, Gadolinium trifluoride 13863-48-4, Terbium phosphate 15845-52-0, Lead monohydrogen phosphate pbhpo4 37233-67-3, Aluminum lutetium oxide alluo3 83636-60-6, Gadolinium yttrium phosphate gd0.5y0.5po4 86546-99-8 212180-01-3, Sodium yttrium fluoride (Na0.4Y0.6F2) 212180-07-9, Barium lutetium yttrium fluoride (BaLuYF8) 212180-09-1, Lutetium sodium fluoride (Lu0.6Na0.4F2) 212180-11-5, Antimony barium niobium oxide (SbBaNb4O12)

RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(prospects for dense, IR-emitting scintillators)

IT 7440-22-4, Silver, properties 12253-68-8, Aluminum lutetium oxide al5lu3ol2

RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(prospects for dense, IR-emitting scintillators)

RN 7440-22-4 HCA

CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

RN 12253-68-8 HCA

CN Aluminum lutetium oxide (Al5Lu3O12) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Lu	3	7439-94-3
Al	5	7429-90-5

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128:238431 Synthesis of **phosphors** via rapid exothermic reactions.

McKittrick, J.; Shea, L. E.; Sastry, I. s. R.; Bacalski, C. (Dep. Applied Mechanics and Eng. Sciences and Materials Science Program, Univ. California San Diego, La Jolla, CA, 92093-0411, USA). Proceedings - Electrochemical Society, 97-29(Luminescent Materials), 22-36 (English) 1998. CODEN: PESODO. ISSN: 0161-6374. Publisher: Electrochemical Society.

AB Combustion synthesis (oxide powder formation) and solid state rapid metathesis (sulfide powder formation) reactions are two such techniques that were successfully applied to **phosphor** synthesis. Y3(Al1-xMx)5O12 (M = Cr, Eu, x = 0.005-0.075) and (Y0.95Eu0.05)2O3 **phosphors** were produced by combustion synthesis and ZnS:Ag and SrGa2S4:Eu were synthesized by solid state rapid metathesis. Both methods produce fine crystallite size, **luminescent** powders in the as-synthesized conditions. The two techniques, the compns. examd., and the resulting phys. and **luminescent** properties are described.

CC 78-6 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 73

ST **phosphor** synthesis rapid exothermic reaction; combustion
 synthesis yttrium aluminum oxide **phosphor**; europium yttrium
 oxide **phosphor** combustion synthesis; solid state metathesis
 prepn sulfide **phosphor**; zinc sulfide solid state metathesis
 prepn; gallium strontium sulfide metathesis prepn

IT Combustion synthesis
 (prepn. of $Y_3(Al_{1-x}M_x)_5O_{12}$ and $(Y_{0.95}Eu_{0.05})_2O_3$ **phosphors** by
 combustion synthesis)

IT Metathesis
 (prepn. of $ZnS:Ag$ and $SrGa_2S_4:Eu$ **phosphors** by solid state
 rapid metathesis)

IT Grain size
 (small; of **phosphors** synthesized via rapid exothermic
 reactions)

IT **Phosphors**
 (synthesis of via rapid exothermic reactions)

IT 117188-64-4P, Europium yttrium oxide ($Eu_{0.1}Y_{1.9}O_3$) **204521-37-9P**,
 Aluminum chromium yttrium oxide ($Al_{4.62-4.98}Cr_{0.02-0.38}Y_{3O_{12}}$)
204521-41-5P, Aluminum europium yttrium oxide ($Al_{4.62-4.98}Eu_{0.02-0.38}Y_{3O_{12}}$)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (combustion synthesis of **phosphor**)

IT 1313-84-4, Sodium sulfide (Na_2S) nonahydrate 7789-02-8, Chromium nitrate
 ($Cr(NO_3)_3$) nonahydrate 10031-53-5, Europium nitrate ($Eu(NO_3)_3$)
 hexahydrate 13450-90-3, Gallium chloride ($GaCl_3$) 13473-90-0, Aluminum
 nitrate 13494-98-9 13968-42-8, Silver chloride ($AgCl$) 16894-53-4,
 Strontium chloride ($SrCl_2$) monohydrate 21351-92-8, Zinc chloride ($ZnCl_2$)
 monohydrate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for synthesis of **phosphors** via rapid exothermic reactions)

IT 7440-53-1, Europium, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (solid state rapid metathesis synthesis of europium **doped**
 gallium strontium sulfide **phosphor**)

IT 1314-98-3P, Zinc sulfide (ZnS), preparation 12592-70-0P, Gallium
 strontium sulfide (Ga_2SrS_4)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (solid state rapid metathesis synthesis of **phosphor**)

IT **7440-22-4**, Silver, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (solid state rapid metathesis synthesis of silver **doped** zinc
 sulfide **phosphor**)

IT **204521-37-9P**, Aluminum chromium yttrium oxide ($Al_{4.62-4.98}Cr_{0.02-0.38}Y_{3O_{12}}$) **204521-41-5P**, Aluminum europium yttrium oxide
 ($Al_{4.62-4.98}Eu_{0.02-0.38}Y_{3O_{12}}$)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (combustion synthesis of **phosphor**)

RN 204521-37-9 HCA

CN Aluminum chromium yttrium oxide ($Al_{4.62-4.98}Cr_{0.02-0.38}Y_{3O_{12}}$) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	12	17778-80-2
Y	3	7440-65-5
Cr	0.02 - 0.38	7440-47-3
Al	4.62 - 4.98	7429-90-5

RN 204521-41-5 HCA
 CN Aluminum europium yttrium oxide (Al4.62-4.98Eu0.02-0.38Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Y	3	7440-65-5
Eu	0.02 - 0.38	7440-53-1
Al	4.62 - 4.98	7429-90-5

IT **7440-22-4, Silver, uses**
 RL: MOA (Modifier or additive use); USES (Uses)
 (solid state rapid metathesis synthesis of silver **doped** zinc
 sulfide **phosphor**)
 RN 7440-22-4 HCA
 CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

L72 ANSWER 9 OF 19 HCA COPYRIGHT 2003 ACS
 128:135873 Optical sensor with radioluminescent **light source**
 . Chuang, Han; Arnold, Mark A. (University of Iowa Research Foundation,
 USA). U.S. US 5708957 A **19980113**, 12 pp. (English). CODEN:
 USXXAM. APPLICATION: US 1996-597509 19960202.
 AB Optical sensors are described which use a radioluminescent **light**
source to supply the incident radiation for detecting a selected
 substance in a test medium coupled with a sensing matrix and a
 photodetector for detecting and quantifying the analyte of interest. The
 sensing matrix produces a characteristic signal based on either absorbance
 or **fluorescence** which varies according to the concn. of the
 selected analyte in the sample and the photodetector measures the
 resulting optical signal from which the analyte concn. is detd. The
 radioluminescent source preferably includes a beta-emitting radioisotope
 which energizes a co-immobilized luminophor to release light at a given
 wavelength.
 IC ICM G01N021-64
 ICS C09K011-04
 NCL 422082070
 CC 79-2 (Inorganic Analytical Chemistry)
 Section cross-reference(s): 73, 80
 ST sensor radioluminescent **light source**
 IT Gas sensors
 Optical sensors
 (optical sensors with radioluminescent **light source**
)
 IT Polysiloxanes, analysis
 RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST
 (Analytical study); USES (Uses)
 (optical sensors with radioluminescent **light source**
)
 IT **Light sources**
 (radioluminescent; optical sensors with radioluminescent **light**
source)
 IT pH
 (sensors for; optical sensors with radioluminescent **light**

source)
IT 7440-22-4, Silver, analysis 7440-53-1, Europium, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(activator; optical sensors with radioluminescent **light source)**
IT 110621-14-2, Yttrium aluminum gallium oxide (Y3(Al,Ga)5O12)
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(cerium-doped; optical sensors with radioluminescent **light source)**
IT 12340-04-4, Yttrium oxysulfide (Y2O2S)
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(europium-doped; optical sensors with radioluminescent **light source)**
IT 124-38-9, Carbon dioxide, analysis 7782-44-7, Oxygen, analysis 12408-02-5, Hydrogen ion, analysis
RL: ANT (Analyte); ANST (Analytical study)
(optical sensors with radioluminescent **light source**)
IT 2303-01-7 9002-86-2, Pvc 9003-53-6 10028-17-8, Tritium, analysis 14380-75-7, Promethium-147, analysis 14762-75-5, Carbon-14, analysis 23570-43-6 36309-88-3 61932-67-0, Merck N 9
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(optical sensors with radioluminescent **light source**)
IT 7440-45-1, Cerium, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(optical sensors with radioluminescent **light source**)
IT 7782-44-7, Oxygen, uses
RL: DEV (Device component use); USES (Uses)
(sensors; optical sensors with radioluminescent **light source**)
IT 1314-98-3, Zinc sulfide, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(silver-doped; optical sensors with radioluminescent **light source**)
IT 7440-22-4, Silver, analysis
RL: ARU (Analytical role, unclassified); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(activator; optical sensors with radioluminescent **light source**)
RN 7440-22-4 HCA
CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

IT 110621-14-2, Yttrium aluminum gallium oxide (Y3(Al,Ga)5O12)
RL: ARU (Analytical role, unclassified); DEV (Device component use); ANST (Analytical study); USES (Uses)
(cerium-doped; optical sensors with radioluminescent **light source**)
RN 110621-14-2 HCA

CN Aluminum gallium yttrium oxide ((Al,Ga)5Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Y	3	7440-65-5
Ga	0 - 5	7440-55-3
Al	0 - 5	7429-90-5

L72/ ANSWER 10 OF 19 HCA COPYRIGHT 2003 ACS

126:256691 **Fluorescence** properties of polycrystalline Tm3+-activated Y3Al5O12 and Tm3+-Li+ co-activated Y3Al5O12 in the visible and near IR ranges. Lopez, O. A.; McKittrick, J.; Shea, L. E. (Chem. Eng. Materials Sci. Dep., Univ. California, Davis, CA, 96516, USA). Journal of Luminescence, 71(1), 1-11 (English) 1997. CODEN: JLUMA8. ISSN: 0022-2313. Publisher: Elsevier.

AB The photoemission properties of polycryst. powder Tm3+-activated Y3Al5O12 and Tm3+-Li+ co-activated Y3Al5O12 were studied in the visible and near-IR ranges at 300 K. The polycryst. materials were obtained through a novel combustion synthesis technique that yields chem. homogeneous and small particle size(<3.0 .mu.m) powders. The emission properties of Tm3+-activated Y3Al5O12 showed that the intensity of the blue emission is weak compared to the red emission. With the addn. of Li+ as a coactivator, the intensity of the blue emission increased by .ltoreq.87%; however the red and IR emissions also increased. Efficiency measurements showed that the **phosphor** reached a max. of 0.21 lm/W at a voltage of 11.7 kV and current of 1 .mu.A/cm2. The optimal compn. for max. blue emission is Y2.93Tm0.07Al5O12 **doped** with 1.0 at.% Li.

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **fluorescence** lithium thulium YAG **phosphor**; yttrium aluminum garnet lithium thulium **fluorescence**

IT **Phosphors**

(blue; **fluorescence** properties of polycryst. thulium trication-activated YAG and Tm3+-lithium monocation co-activated YAG in visible and near IR ranges)

IT Electronic state

Fluorescence

(**fluorescence** properties of polycryst. thulium trication-activated YAG and Tm3+-lithium monocation co-activated YAG in visible and near IR ranges)

IT 7439-93-2, Lithium, properties 7440-30-4, Thulium, properties 17341-24-1, Lithium 1+, properties 22541-23-7, Thulium(3+), properties RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(**fluorescence** properties of polycryst. thulium trication-activated YAG and Tm3+-lithium monocation co-activated YAG in visible and near IR ranges)

IT 12005-21-9, YAG 188615-73-8, Aluminum thulium yttrium oxide (Al5Tm0.01Y2.99O12) 188615-74-9, Aluminum thulium yttrium oxide (Al5Tm0.02Y2.98O12) 188615-75-0, Aluminum thulium yttrium oxide (Al5Tm0.03Y2.97O12) 188615-76-1, Aluminum thulium yttrium oxide (Al5Tm0.04Y2.96O12) 188615-77-2, Aluminum thulium yttrium oxide (Al5Tm0.07Y2.93O12)

RL: PRP (Properties)

(**fluorescence** properties of polycryst. thulium trication-activated YAG and Tm3+-lithium monocation co-activated YAG in visible and near IR ranges)

IT 7439-93-2, Lithium, properties

RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
 (fluorescence properties of polycryst. thulium
 trication-activated YAG and Tm3+-lithium monocation co-activated YAG in
 visible and near IR ranges)

RN 7439-93-2 HCA

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT 188615-73-8, Aluminum thulium yttrium oxide (Al5Tm0.01Y2.99O12)

188615-74-9, Aluminum thulium yttrium oxide (Al5Tm0.02Y2.98O12)

188615-75-0, Aluminum thulium yttrium oxide (Al5Tm0.03Y2.97O12)

188615-76-1, Aluminum thulium yttrium oxide (Al5Tm0.04Y2.96O12)

188615-77-2, Aluminum thulium yttrium oxide (Al5Tm0.07Y2.93O12)

RL: PRP (Properties)

(fluorescence properties of polycryst. thulium
 trication-activated YAG and Tm3+-lithium monocation co-activated YAG in
 visible and near IR ranges)

RN 188615-73-8 HCA

CN Aluminum thulium yttrium oxide (Al5Tm0.01Y2.99O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	2.99	7440-65-5
Tm	0.01	7440-30-4
Al	5	7429-90-5

RN 188615-74-9 HCA

CN Aluminum thulium yttrium oxide (Al5Tm0.02Y2.98O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	2.98	7440-65-5
Tm	0.02	7440-30-4
Al	5	7429-90-5

RN 188615-75-0 HCA

CN Aluminum thulium yttrium oxide (Al5Tm0.03Y2.97O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	2.97	7440-65-5
Tm	0.03	7440-30-4
Al	5	7429-90-5

RN 188615-76-1 HCA

CN Aluminum thulium yttrium oxide (Al5Tm0.04Y2.96O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	2.96	7440-65-5

Tm	0.04	7440-30-4
Al	5	7429-90-5

RN 188615-77-2 HCA

CN Aluminum thulium yttrium oxide (Al5Tm0.07Y2.93O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	2.93	7440-65-5
Tm	0.07	7440-30-4
Al	5	7429-90-5

L72 ANSWER 11 OF 19 HCA COPYRIGHT 2003 ACS

120:177529 High-sensitivity image-sensor-incorporated image intensifier tube with charge-coupled device for x-ray diffraction. Nakajima, Kunio; Sudo, Shuzo; Aoki, Sadao (Seiko Instrum. Inc., Matsudo, 271, Japan). Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers, 32(12A), 5754-8 (English) 1993. CODEN: JAPNDE. ISSN: 0021-4922.

AB The construction and performance of the 2-dimensional x-ray detector are described for x-ray diffraction. The detector consists of an input **fluorescent** screen, an image intensifier tube and a charge-coupled device (CCD) image sensor, which is coupled using fiber-optics. The background noise of the detector is .apprx.10⁻³ of the satn. peak, and the linearity range is .apprx.2 orders of magnitude for the incident x-ray photons. The observation of the diffraction images with a low x-ray dose is demonstrated using this detector.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74

ST x ray diffractometry detector; CCD **fluorescence** screen x ray diffractometry; charge coupled detector x ray diffractometry

IT Diffractometry

(x-ray, detector for, two-dimensional, with charge-coupled device and **fluorescent** screen)

IT Radiation counters and detectors

(x-ray, for diffractometry, two-dimensional, with charge-coupled device and **fluorescent** screen)

IT **Luminescent** screens

(x-ray, x-ray detector contg., for diffractometry)

IT 7440-45-1, Cerium, uses

RL: USES (Uses)

(**fluorescent** screen for x-ray diffractometry detector contg. aluminum gallium yttrium oxide **doped** with)

IT 1314-98-3, Zinc monosulfide, uses

RL: USES (Uses)

(**fluorescent** screen for x-ray diffractometry detector contg. aluminum- and copper-**doped**)

IT 110621-14-2, Aluminum gallium yttrium oxide (al0-5ga0-5y3o12)

RL: USES (Uses)

(**fluorescent** screen for x-ray diffractometry detector contg. cerium-**doped**)

IT 7440-27-9, Terbium, uses

RL: USES (Uses)

(**fluorescent** screen for x-ray diffractometry detector contg. gadolinium oxysulfide **doped** with)

IT 12339-07-0, Gadolinium oxysulfide (gd2o2s)

RL: USES (Uses)
 (fluorescent screen for x-ray diffractometry detector contg.
 terbium-doped)
 IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses
 RL: USES (Uses)
 (fluorescent screen for x-ray diffractometry detector contg.
 zinc monosulfide doped with)
 IT 110621-14-2, Aluminum gallium yttrium oxide (al0-5ga0-5y3o12)
 RL: USES (Uses)
 (fluorescent screen for x-ray diffractometry detector contg.
 cerium-doped)
 RN 110621-14-2 HCA
 CN Aluminum gallium yttrium oxide ((Al,Ga)5Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	0 - 5	7440-55-3
Al	0 - 5	7429-90-5

IT 7440-50-8, Copper, uses
 RL: USES (Uses)
 (fluorescent screen for x-ray diffractometry detector contg.
 zinc monosulfide doped with)
 RN 7440-50-8 HCA
 CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

L72 ANSWER 12 OF 19 HCA COPYRIGHT 2003 ACS
 115:169493 Problems and progress in cathode-ray **phosphors** for
 high-definition **displays**. Yamamoto, Hajime; Matsukiyo,
 Hidetsugu (Cent. Res. Lab., Hitachi Ltd., Kokubunji, 185, Japan). Journal
 of Luminescence, 48-49(Pt. 1), 43-8 (English) 1991. CODEN:
 JLUMA8. ISSN: 0022-2313.
 AB The state-of-the-art development of **phosphors** mainly for
 projection tubes is reviewed with an emphasis on improvement of degrdn. by
 electron bombardment. Oxygen depletion obsd. for InBO3:Tb3+,
 Zn2SiO4:Mn2+, and Zn3(PO4)2:Mn2+ indicates a potential to form oxygen
 vacancies, which can change into color centers by trapping electrons.
 Formation of traps is possibly assocd. with oxidn. of Eu2+ by electron
 bombardment in Sr3MgSi2O8:Eu2+. An impurity ion can also affect the
 degrdn.; for example, in Y3Al5O12:Tb3+ and Y3(Al,Ga)5O12:Tb3+,
doping of 101-102 ppm Yb3+ or Eu3+ reduces the degrdn. When heat
 stored in a **phosphor** layer assists the degrdn., a thin layer
 with dense packing is desirable. In this respect, surface coating
 techniques as well as the size and shape of **phosphor** particles
 are important.
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 74
 ST cathode ray **phosphor display**
 IT Projection apparatus
 (cathode-ray **phosphors** for high-definition **displays**
)
 IT Color centers

(cathode-ray **phosphors** with, for high-definition **displays**)

IT **Phosphors**
(cathode-ray, for high-definition **displays**)

IT **Luminescence**, thermo-
(of cathode-ray **phosphors** for high-definition **displays**)

IT 22541-20-4, Terbium(3+), uses and miscellaneous
RL: USES (Uses)
(cathode-ray **phosphors** from aluminum gallium yttrium oxide and indium borate **doped** with, for high-definition **displays**)

IT 1314-98-3, Zinc sulfide, uses and miscellaneous
RL: USES (Uses)
(cathode-ray **phosphors** from aluminum-silver-**doped**, for high-definition **displays**)

IT 15699-48-6, Magnesium strontium silicate (MgSr3Si2O8)
RL: PRP (Properties)
(cathode-ray **phosphors** from europium(2+)-**doped**, for high-definition **displays**)

IT 16910-54-6, Europium(2+), uses and miscellaneous
RL: USES (Uses)
(cathode-ray **phosphors** from magnesium strontium silicate **doped** with, for high-definition **displays**)

IT 13709-93-8, Indium borate (InBO3) **136479-11-3**, Aluminum gallium yttrium oxide (Al3.4Ga1.6Y3O12)
RL: PRP (Properties)
(cathode-ray **phosphors** from terbium(3+)-**doped**, for high-definition **displays**)

IT **7440-22-4, Silver**, uses and miscellaneous
RL: USES (Uses)
(cathode-ray **phosphors** from zinc sulfide **doped** with aluminum and, for high-definition **displays**)

IT 7429-90-5, Aluminum, uses and miscellaneous
RL: USES (Uses)
(cathode-ray **phosphors** from zinc sulfide **doped** with **silver** and, for high-definition **displays**)

IT **136479-11-3**, Aluminum gallium yttrium oxide (Al3.4Ga1.6Y3O12)
RL: PRP (Properties)
(cathode-ray **phosphors** from terbium(3+)-**doped**, for high-definition **displays**)

RN 136479-11-3 HCA
CN Aluminum gallium yttrium oxide (Al3.4Ga1.6Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Y	3	7440-65-5
Ga	1.6	7440-55-3
Al	3.4	7429-90-5

IT **7440-22-4, Silver**, uses and miscellaneous
RL: USES (Uses)
(cathode-ray **phosphors** from zinc sulfide **doped** with aluminum and, for high-definition **displays**)

RN 7440-22-4 HCA
CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

L72 ANSWER 13 OF 19 HCA COPYRIGHT 2003 ACS

- 111:204991 Electrophoretic preparation of **phosphor** screens. Sluzky, Esther; Hesse, Kenneth (Ind. Prod. Div., Hughes Aircr. Co., Carlsbad, CA, 92008, USA). Journal of the Electrochemical Society, 136(9), 2724-7 (English) 1989. CODEN: JESOAN. ISSN: 0013-4651.
- AB **Phosphor** screens for cathode ray tubes (CRTs) prepd. by electrophoresis can demonstrate brightness equal to the std. settling coating process and are capable of high resolu. Typical screens investigated were sulfides, oxysulfides, silicates, oxides, and others. Descriptions are given of the various process parameters. From resolu. and optical measurements, the electrophoretic process produces screens with markedly different optical characteristics compared to settling. The screen performance is described for sealed off and demountable CRTs.
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
- ST **phosphor** screen prepn cathode ray tube; sulfide **phosphor** screen cathode ray tube; oxysulfide **phosphor** screen cathode ray tube; silicate **phosphor** screen cathode ray tube; oxide **phosphor** screen cathode ray tube
- IT Electrophoresis and Ionophoresis
(in **phosphor** screen prepn. for cathode-ray tubes)
- IT Oxides, uses and miscellaneous
RL: USES (Uses)
(**phosphors**, for cathode-ray tubes)
- IT Silicates, uses and miscellaneous
Sulfides, uses and miscellaneous
RL: PREP (Preparation)
(**phosphors**, prepn. for cathode-ray tubes)
- IT **Phosphors**
(prepn. of, by electrophoresis of cathode-ray tubes)
- IT **Luminescent** screens
(**electro-**, prepn. of, by electrophoresis)
- IT 1314-98-3P, Zinc sulfide, uses and miscellaneous
RL: PREP (Preparation)
(**phosphor** screens from silver-contg., prepn. by electrophoresis for cathode-ray tubes)
- IT 7439-96-5P, Manganese, uses and miscellaneous
RL: PREP (Preparation)
(**phosphor** screens from zinc silicate **doped** with, prepn. by electrophoresis for cathode-ray tubes)
- IT 7440-22-4, Silver, **uses** and miscellaneous
RL: PRP (Properties)
(**phosphor** screens from zinc sulfide contg., prepn. by electrophoresis for cathode-ray tubes)
- IT 12339-07-0P, Gadolinium oxysulfide (Gd₂O₂S)
RL: PREP (Preparation)
(**phosphors** from terbium-**doped**, prepn. by electrophoresis for cathode-ray tubes)
- IT 7440-27-9P, Terbium, uses and miscellaneous
RL: PREP (Preparation)
(**phosphors** screens from garnet or oxysulfide **doped** with, prepn. by electrophoresis for cathode-ray tubes)
- IT 19299-00-4P, Zinc silicate (ZnSiO₄)
RL: PREP (Preparation)
(**phosphors** screens from manganese-contg., prepn. by

electrophoresis for cathode-ray tubes)
 IT **110621-14-2P**, Aluminum gallium yttrium oxide ((Al,Ga)5Y3O12)
 RL: PREP (Preparation)
 (phosphors screens from terbium-contg., prepn. by
 electrophoresis for cathode-ray tubes)
 IT **7440-22-4**, Silver, **uses** and miscellaneous
 RL: PRP (Properties)
 (phosphor screens from zinc sulfide contg., prepn. by
 electrophoresis for cathode-ray tubes)
 RN 7440-22-4 HCA
 CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

IT **110621-14-2P**, Aluminum gallium yttrium oxide ((Al,Ga)5Y3O12)
 RL: PREP (Preparation)
 (phosphors screens from terbium-contg., prepn. by
 electrophoresis for cathode-ray tubes)
 RN 110621-14-2 HCA
 CN Aluminum gallium yttrium oxide ((Al,Ga)5Y3O12) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	0 - 5	7440-55-3
Al	0 - 5	7429-90-5

L72 ANSWER 14 OF 19 HCA COPYRIGHT 2003 ACS

109:120353 Conductivity pre-exponential factors for some new superionic
 conductors. Desai, N. B.; Byrappa, K.; Gopalakrishna, G. S.;
 Srikantaswamy, S.; Kulkarni, A. B. (Dep. Geol., Univ. Mysore, Mysore, 570
 006, India). Bulletin of Materials Science, 9(5), 317-21 (English)
 1987. CODEN: BUMSDW. ISSN: 0250-4707.

AB The pre-exponential factors obtained from the ionic cond. studies on
 Na₂(La,Al)ZrP₃O₁₂, Na₂(La,Al)TiP₃O₁₂, NH₄Zr₂V₃O₁₂ and AlPO₄:Li⁺ were
 analyzed. The compn. law was valid for these materials indicating that
 the entropy is directly related to the activation energy. The 1/.alpha.
 vs .beta. plots show straight lines for most of the superionic materials
 except for a few and this variation is discussed.

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 65

IT 12057-24-8, Lithium oxide, properties

RL: PRP (Properties)

(preexponential factor and activation energy for aluminum phosphate
doped with lithium in presence of)

IT **7439-93-2**, Lithium, properties

RL: PRP (Properties)

(preexponential factor and activation energy for elec. cond. of
 aluminum phosphate **doped** with)

IT **107284-06-0 107284-07-1**

RL: PRP (Properties)

(preexponential factor and activation energy for elec. cond. of,
 lanthanum oxide effect on)

IT **7439-93-2**, Lithium, properties

RL: PRP (Properties)

(preexponential factor and activation energy for elec. cond. of

aluminum phosphate **doped** with)
RN 7439-93-2 HCA
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT 107284-06-0 107284-07-1
RL: PRP (Properties)
(preexponential factor and activation energy for elec. cond. of,
lanthanum oxide effect on)
RN 107284-06-0 HCA
CN Aluminum lanthanum sodium titanium phosphate ((Al,La)Na₂Ti(PO₄)₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	1	7440-32-6
Na	2	7440-23-5
La	0 - 1	7439-91-0
Al	0 - 1	7429-90-5

RN 107284-07-1 HCA
CN Aluminum lanthanum sodium zirconium phosphate ((Al,La)Na₂Zr(PO₄)₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	1	7440-67-7
Na	2	7440-23-5
La	0 - 1	7439-91-0
Al	0 - 1	7429-90-5

L72 ANSWER 15 OF 19 HCA COPYRIGHT 2003 ACS

104:101023 Suppression of magnetostatic waves within magnetic garnet films for microwave circuit applications. De Gasperis, P.; Roveda, R.; Di Gregorio, Carlo; Miccoli, G. (Selenia Industrie Eletttroniche Associate S.p.A., Italy; Consiglio Nazionale delle Ricerche). Eur. Pat. Appl. EP 160773 A2 **19851113** DESIGNATED STATES: R: AT, BE, DE, FR, GB, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1984-830331 19841206. PRIORITY: IT 1984-47733 19840221.

AB A method for the controlled suppression of magnetostatic waves within magnetic garnet films for microwave circuit applications is based upon multilayer structures of epitaxial garnet films with low and high magnetic losses. Thus, a passive dielec. substrate (e.g., Gd₃Ga₅O₁₂) is subjected to deposition by liq.-phase epitaxy of a magnetostatic layer (e.g., Y₃Fe₅O₁₂ or (La,Y)₃(Fe,Ga)₅O₁₂) and an absorption layer (e.g., Ca-**doped** Y₃Fe₅O₁₂ or Ca-**doped** Y₃(Fe,Ga)₅O₁₂) to give structures useful in magnetostatic mode suppression.

IC ICM H01F010-24
ICS H03H002-00

CC 77-3 (Magnetic Phenomena)
Section cross-reference(s): 76

IT Alkaline earth metals
Rare earth metals, uses and miscellaneous

Transition metals, uses and miscellaneous

RL: USES (Uses)

(magnetostatic wave suppression by garnet films **doped** with,
for microwave circuits)

IT **12024-41-8D**, solid solns. with yttrium ferrite 12063-56-8D,
solid solns. with yttrium gallate

RL: PRP (Properties)

(magnetostatic wave suppression by calcium-**doped**, for
microwave circuits)

IT **12024-36-1**

RL: PRP (Properties)

(magnetostatic wave suppression by epitaxial **doped** yttrium
ferrite on, for microwave circuits)

IT 7439-89-6, uses and miscellaneous

RL: USES (Uses)

(magnetostatic wave suppression in garnet films **doped** with
divalent and tetravalent, for microwave circuits)

IT 7440-19-9, uses and miscellaneous

RL: USES (Uses)

(magnetostatic wave suppression in garnet films **doped** with
tetravalent, for microwave circuits)

IT 7429-91-6, uses and miscellaneous 7439-91-0, uses and miscellaneous

7439-93-2, uses and miscellaneous 7439-95-4, uses and

miscellaneous 7440-03-1, uses and miscellaneous 7440-21-3, uses and

miscellaneous 7440-24-6, uses and miscellaneous 7440-25-7, uses and

miscellaneous 7440-29-1, uses and miscellaneous 7440-32-6, uses and

miscellaneous 7440-41-7, uses and miscellaneous 7440-48-4, uses and

miscellaneous 7440-52-0, uses and miscellaneous 7440-55-3, uses and

miscellaneous 7440-56-4, uses and miscellaneous 7440-58-6, uses and

miscellaneous 7440-60-0, uses and miscellaneous 7440-62-2, uses and

miscellaneous 7440-66-6, uses and miscellaneous 7440-67-7, uses and

miscellaneous 7440-70-2, uses and miscellaneous

RL: USES (Uses)

(magnetostatic wave suppression in garnet films **doped** with,
for microwave circuits)

IT **12024-41-8D**, solid solns. with yttrium ferrite

RL: PRP (Properties)

(magnetostatic wave suppression by calcium-**doped**, for
microwave circuits)

RN 12024-41-8 HCA

CN Gallium yttrium oxide (Ga₅Y₃O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	12	17778-80-2
Y	3	7440-65-5
Ga	5	7440-55-3

IT **12024-36-1**

RL: PRP (Properties)

(magnetostatic wave suppression by epitaxial **doped** yttrium
ferrite on, for microwave circuits)

RN 12024-36-1 HCA

CN Gadolinium gallium oxide (Gd₃Ga₅O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O	12	17778-80-2

Ga		5		7440-55-3
Gd		3		7440-54-2

IT 7439-93-2, **uses** and miscellaneous
RL: USES (Uses)
(magnetostatic wave suppression in garnet films **doped** with,
for microwave circuits)

RN 7439-93-2 HCA

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

L72 ANSWER 16 OF 19 HCA COPYRIGHT 2003 ACS

93:17891 Green **phosphor** for low-energy electron **fluorescent**
tube. Kagami, Akiyuki; Tanigami, Yoshinori (Kasei Optonix, Ltd., Japan;
Japan Electronic Industry Development Assoc.). Jpn. Kokai Tokkyo Koho JP
55023105 **19800219** Showa, 9 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1978-32492 19780322.

AB A **phosphor** with improved brightness at .ltoreq.100 V consists of
a mixt. of (1) .gtoreq.1 conductive metal oxides and sulfides with a
medium size of 2.5-14 .mu., and (2) .gtoreq.1 Zn2SiO4 **doped** with
Mn, Zn2SiO4 **doped** with Mn and As, rare earth oxysulfide
doped with Tb, Y3(A), (Ga)5O12 **doped** with Ce, and
SrGa2S4:Eu with the ratio of (1)/(2) = 1:99-1:4.

IC C09K011-14; C09K011-20; C09K011-46

CC 76-7 (Electric Phenomena)

ST **phosphor** green **fluorescent** tube; conductive metal
oxide **phosphor**; metal compd conductor **phosphor**;
sulfide metal conductor **phosphor**

IT Oxides, **uses** and miscellaneous
Sulfides, **uses** and miscellaneous
RL: USES (Uses)

(conductors, in **phosphors**)

IT **Phosphors**
(of metal oxide and sulfide conductors with zinc silicates and rare
earth oxysulfides and aluminum gallium yttrium oxides and gallium
strontium sulfide)

IT Electric conductors
(of metal oxides and sulfides, for **phosphors**)

IT Rare earth metals, compounds
RL: USES (Uses)
(oxysulfides, **phosphors** contg.)

IT Rare earth oxide sulfides
RL: USES (Uses)

(**phosphors** contg.)

IT 1306-23-6, **uses** and miscellaneous 1312-43-2 1314-98-3, **uses** and
miscellaneous **7440-22-4**, **uses** and miscellaneous
7440-53-1, **uses** and miscellaneous 12005-21-9D, solid solns. with gallium
yttrium oxide **12024-41-8D**, solid solns. with aluminum yttrium
oxide 12592-70-0 13597-65-4 18282-10-5
RL: USES (Uses)

(**phosphors** contg.)

IT 7429-90-5, **uses** and miscellaneous 7439-96-5, **uses** and miscellaneous
7440-38-2, **uses** and miscellaneous 7440-45-1, **uses** and miscellaneous
7440-50-8, **uses** and miscellaneous
RL: USES (Uses)

(**phosphors** of oxides and sulfides **doped** with)

IT **7440-22-4**, **uses** and miscellaneous **12024-41-8D**,

solid solns. with aluminum yttrium oxide

RL: USES (Uses)

(**phosphors** contg.)

RN 7440-22-4 HCA

CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

RN 12024-41-8 HCA

CN Gallium yttrium oxide (Ga₅Y₃O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Y	3	7440-65-5
Ga	5	7440-55-3

IT **7440-50-8, uses** and miscellaneous

RL: USES (Uses)

(**phosphors** of oxides and sulfides **doped** with)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

L72 ANSWER 17 OF 19 HCA COPYRIGHT 2003 ACS

87:76410 **Fluorescent** compositions and their use in optical **display** devices. Hase, Takashi; Kagami, Akiyasu; Mimura, Yoshiyuki; Narita, Kinichiro; Hiraki, Minoru (Dainippon Toryo Co., Ltd., Japan). Ger. Offen. DE 2629413 **19770113**, 91 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1976-2629413 19760630.

AB **Fluorescent** masses for optical **display** devices are composed of In₂O₃ and a **phosphor** selected from (La_{1-x}Y_x)₂O₂S:Tb (0.1toeq.x.1toeq.1), (Zn_{1-x}Cd_x)S:Cu,Al (0.1toeq.x.1toeq.0.1), SrGa₂S₄:Eu²⁺, Y₃(Al_{1-x}Ga_x)₅O₁₂:Ce (0.1toeq.x.1toeq.0.5), Zn₂SiO₄:Mn, Y₂O₂S:Tb, ZnS:Ag, Y₂O₂S:Eu, Y₂O₃:Eu, and YVO₄:Eu. Thus, In₂O₃ 3 and La₂O₂S:Tb (Tb at 5.times.10-2g/g) 7 parts by wt. were mixed in a mortar and 200 mg of this mixt. was dispersed in H₂O 100 mL contg. 0.01% water glass, coated on a 2.times.1 cm Al anode plate at 10 mg/cm² for use as a **fluorescent** screen. This coated Al anode plate was then assembled into a **display** device giving an emission with a brightness of 3.5 ft-L at an anode potential of 80 V, a cathode potential of 0.6 V, and a cathode current of 40 mA.

IC C09K011-46

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes) Section cross-reference(s): 76

ST **fluorescent** optical **display** device; **phosphor** indium oxide **display** device

IT **Phosphors** (**fluorescent** compns. contg. indium oxide and, for electrofluorescent **display** devices)

IT Optical **display** devices (electro-, **fluorescent** compns. contg. indium oxide and **phosphors** for)

IT **12024-41-8D**, solid solns. with aluminum yttrium oxide

RL: USES (Uses)
(cerium-doped, **fluorescent** compn. contg., for
electrooptical **display** devices)

IT 12005-21-9 12005-21-9D, solid solns. with gallium yttrium oxide
RL: USES (Uses)
(cerium-doped, **fluorescent** compns. contg. indium
oxide and, for electrofluorescent **display** devices)

IT 1306-23-6D, solid solns. with zinc sulfide 1314-98-3, uses and
miscellaneous 1314-98-3D, solid solns. with cadmium sulfide
RL: USES (Uses)
(doped with aluminum and **copper**,
fluorescent compns. contg., for electrofluorescent
display devices)

IT 12592-70-0 13566-12-6
RL: USES (Uses)
(europium-doped, **fluorescent** compns. contg. indium
oxide and, for electrofluorescent **display** devices)

IT 1312-43-2
RL: USES (Uses)
(**fluorescent** compns. contg. **phosphors** and, for
electrofluorescent **display** devices)

IT 13597-65-4
RL: USES (Uses)
(manganese-doped, **fluorescent** compns. contg. indium
oxide and, for electrofluorescent **display** devices)

IT 12340-04-4
RL: USES (Uses)
(metal-doped, **fluorescent** compns. contg. indium
oxide and, for electrofluorescent **display** devices)

IT 7429-90-5, uses and miscellaneous 7440-27-9, uses and miscellaneous
7440-45-1, uses and miscellaneous **7440-50-8, uses** and
miscellaneous 7440-53-1, uses and miscellaneous
RL: USES (Uses)
(**phosphors doped** with, **fluorescent**
compns. contg. indium oxide and, for electrofluorescent **display**
devices)

IT 12031-43-5 12031-43-5D, solid solns. with yttrium oxide sulfide
12340-04-4D, solid solns. with lanthanum oxide sulfide
RL: USES (Uses)
(terbium-doped, **fluorescent** compns. contg. indium
oxide and, for electrofluorescent **display** devices)

IT 7439-96-5, uses and miscellaneous
RL: USES (Uses)
(zinc silicate **phosphor doped** with,
fluorescent compns. contg. indium oxide and, for
electrofluorescent **display** devices)

IT **7440-22-4, uses** and miscellaneous
RL: USES (Uses)
(zinc sulfide **phosphor doped** with, for
display devices)

IT **12024-41-8D**, solid solns. with aluminum yttrium oxide
RL: USES (Uses)
(cerium-doped, **fluorescent** compn. contg., for
electrooptical **display** devices)

RN 12024-41-8 HCA
CN Gallium yttrium oxide (Ga5Y3O12) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	+	=====

O		12		17778-80-2
Y		3		7440-65-5
Ga		5		7440-55-3

IT 7440-50-8, uses and miscellaneous
RL: USES (Uses)
(phosphors doped with, fluorescent
comps. contg. indium oxide and, for electrofluorescent display
devices)
RN 7440-50-8 HCA
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7440-22-4, uses and miscellaneous
RL: USES (Uses)
(zinc sulfide phosphor doped with, for
display devices)
RN 7440-22-4 HCA
CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

L72 ANSWER 18 OF 19 HCA COPYRIGHT 2003 ACS
87:60818 Luminescent composition. Kagami, Akiyasu; Hase, Takashi;
Mimura, Yoshiyuki; Narita, Kinichiro (Dai Nippon Toryp Co., Ltd., Japan).
Ger. Offen. DE 2620821 19761118, 86 pp. (German). CODEN:
GWXXBX. APPLICATION: DE 1976-2620821 19760511.
AB Luminescent comps. for optical display devices are
composed of ZnO and a phosphor selected from (Zn_{1-x}Cd_x)S:
Cu, Al(0 .ltoreq. x .ltoreq. 0.1), Y₃(Al_{1-y}Ga_y)₅O₁₂:Ce(0 .ltoreq. y
.ltoreq. 0.5), Zn₂SiO₄:Mn, (Y_{1-z}Laz_z)₂O₂S:Tb(0 .ltoreq. z .ltoreq. 1),
SrGa₂S₄:Eu²⁺, ZnS:Ag, and Y₂O₂S:Eu. Thus, ZnO 1 and ZnS:
Cu, Al(Cu and Al at 10-4 g/g) 1 part by wt. was mixed in
a mortar and 200 mg of this mixt. was dispersed in H₂O 100 mL contg. 0.01%
water glass, coated on a 2 .times. 1 cm Al anode plate at 10 mg/cm² for
use as a luminescent screen. This coated Al anode plate was
then assembled into a luminescent display device
giving a green emission with a brightness of 8.2 ft.-L, at an anode
potential of 80V, a cathode potential of 0.6 V, and a cathode current of
40mA.
IC C09K011-46
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 73
ST zinc oxide phosphor optical display; electrooptical
display zinc oxide phosphor; electroluminescent
display device
IT Electroluminescent devices
(comps. contg. phosphor and zinc oxide for)
IT 1314-13-2, uses and miscellaneous
RL: USES (Uses)
(luminescent comps. contg. phosphors and, for
display devices)
IT 1306-23-6D, solid solns. with zinc sulfide 1314-98-3, uses and
miscellaneous 1314-98-3D, solid solns. with cadmium sulfide
RL: USES (Uses)
(luminescent comps. contg. zinc oxide and aluminum- and

copper-doped, for optical **display** devices)
 IT 12024-41-8D, solid solns. with aluminum yttrium oxide
 RL: USES (Uses)
 (**luminescent** compns. contg., for **display** devices)
 IT 12005-21-9 12005-21-9D, solid solns. with gallium yttrium oxide
 RL: USES (Uses)
 (**luminescent** compns. from zinc oxide and cerium-doped
 , for **display** devices)
 IT 12592-70-0
 RL: USES (Uses)
 (**luminescent** compns. from zinc oxide and europium ion-
 doped, for **display** devices)
 IT 13597-65-4
 RL: USES (Uses)
 (**luminescent** compns. from zinc oxide and manganese-
 doped, for **display** devices)
 IT 12031-43-5 12340-04-4
 RL: USES (Uses)
 (**luminescent** compns. from zinc oxide and terbium-
 doped, for **display** devices)
 IT 7429-90-5, uses and miscellaneous 7440-45-1, uses and miscellaneous
 7440-50-8, uses and miscellaneous
 RL: USES (Uses)
 (**phosphors doped** with, **luminescent**
 compns. from zinc oxide and, for **display** devices)
 IT 7440-27-9, uses and miscellaneous
 RL: USES (Uses)
 (rare earth oxide sulfide **phosphors doped** with, for
luminescent display compns.)
 IT 16910-54-6, uses and miscellaneous
 RL: USES (Uses)
 (strontium gallium sulfide **doped** with, **luminescent**
 compns. contg. zinc oxide and, for **display** devices)
 IT 7440-66-6, uses and miscellaneous
 RL: USES (Uses)
 (zinc oxide **doped** with, **luminescent** compns. contg.
phosphors and, for **display** devices)
 IT 7439-96-5, uses and miscellaneous
 RL: USES (Uses)
 (zinc silicate **phosphor doped** with,
luminescent compns. contg. zinc oxide and, for **display**
 devices)
 IT 7440-22-4, uses and miscellaneous
 RL: USES (Uses)
 (zinc sulfide **doped** with, **luminescent** compns.
 contg. **phosphors** and, for **display** devices)
 IT 12024-41-8D, solid solns. with aluminum yttrium oxide
 RL: USES (Uses)
 (**luminescent** compns. contg., for **display** devices)
 RN 12024-41-8 HCA
 CN Gallium yttrium oxide (Ga5Y3O12) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	5	7440-55-3

IT 7440-50-8, uses and miscellaneous

RL: USES (Uses)

(phosphors doped with, luminescent
compns. from zinc oxide and, for display devices)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

IT 7440-22-4, uses and miscellaneous

RL: USES (Uses)

(zinc sulfide doped with, luminescent compns.
contg. phosphors and, for display devices)

RN 7440-22-4 HCA

CN Silver (8CI, 9CI) (CA INDEX NAME)

Ag

L72 ANSWER 19 OF 19 HCA COPYRIGHT 2003 ACS

55:135522 Original Reference No. 55:25489e-g Absorption spectra of Cu++ in
different crystal coordinations. Pappalardo, R. (Bell Telephone Labs.,
Inc., Murray Hill, NJ). Journal of Molecular Spectroscopy, 6, 554-71
(Unavailable) 1961. CODEN: JMOSA3. ISSN: 0022-2852.AB cf. Geller, CA 54, 23587h. The optical absorption of Cu++ was studied in
the crystal coordinations of single crystals of ZnO doped with
Cu (and other transition elements), in coordinations in CuSiF6.6H2O and
Cu-doped ZnSiF6.6H2O crystals, and of Cu-doped YGa
garnet single crystals. The near-infrared absorption spectra are
illustrated. The predictions of the crystal-field theory for tetrahedral
Cu++ were in excellent agreement with expt. The electronic-energy levels
of Fe-group impurity ions could be described successfully by the
crystal-field theory. The optical absorption method was very sensitive to
the presence of tetrahedral Cu and rivaled other techniques, such as x-ray
fluorescence and paramagnetic resonance. The site symmetry at the
Cu++ ion in the YGa garnet could be inferred from the absorption spectra
and suggested that at least a sizeable no. of the Cu ions is present in
tetrahedral sites in the garnets.

CC 3 (Electronic Phenomena and Spectra)

IT 12024-41-8, Yttrium gallate, Y3Ga5O12

(copper-contg., spectrum of)

IT 7440-50-8, Copper

(spectrum of, in crystal coordinations)

IT 12024-41-8, Yttrium gallate, Y3Ga5O12

(copper-contg., spectrum of)

RN 12024-41-8 HCA

CN Gallium yttrium oxide (Ga5Y3O12) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Y	3	7440-65-5
Ga	5	7440-55-3

IT 7440-50-8, Copper

(spectrum of, in crystal coordinations)

RN 7440-50-8 HCA

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Carrie Thompson

10/074,018

06/17/2003

Cu